The MEMS Exchange Program

A Full-Service Implementation Service for Rapid Prototyping & Production

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Description of the MEMS Exchange Program

- An implementation service supported by DARPA and comprised of a network of high-quality MEMS fabrication sites which are made available to the domestic community
- Most comprehensive and diverse set of processing technologies available.
- A full-service organization that can provide as much help as needed so that the customer can get their devices made in the most efficient and expedient method possible
- The MEMS Exchange allows flexibility in: processing step parameters; ordering of processing steps to construct process sequence; materials; processing site(s); etc.
- These process sequences may cross the boundaries separating individual fabrication facilities in order to maximize process and design freedom

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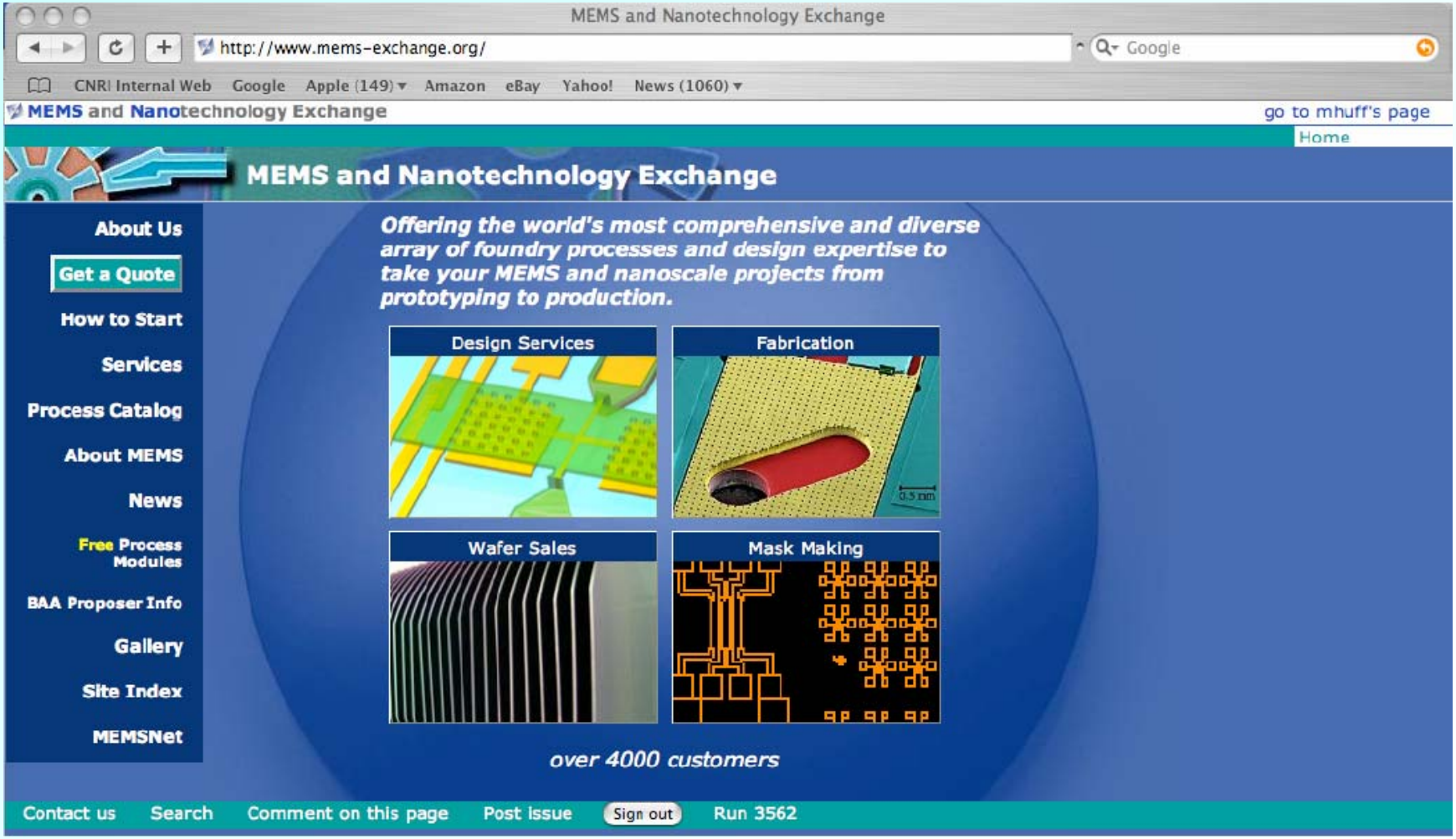
MEMS Exchange Home Page

http://www.mems-exchange.org



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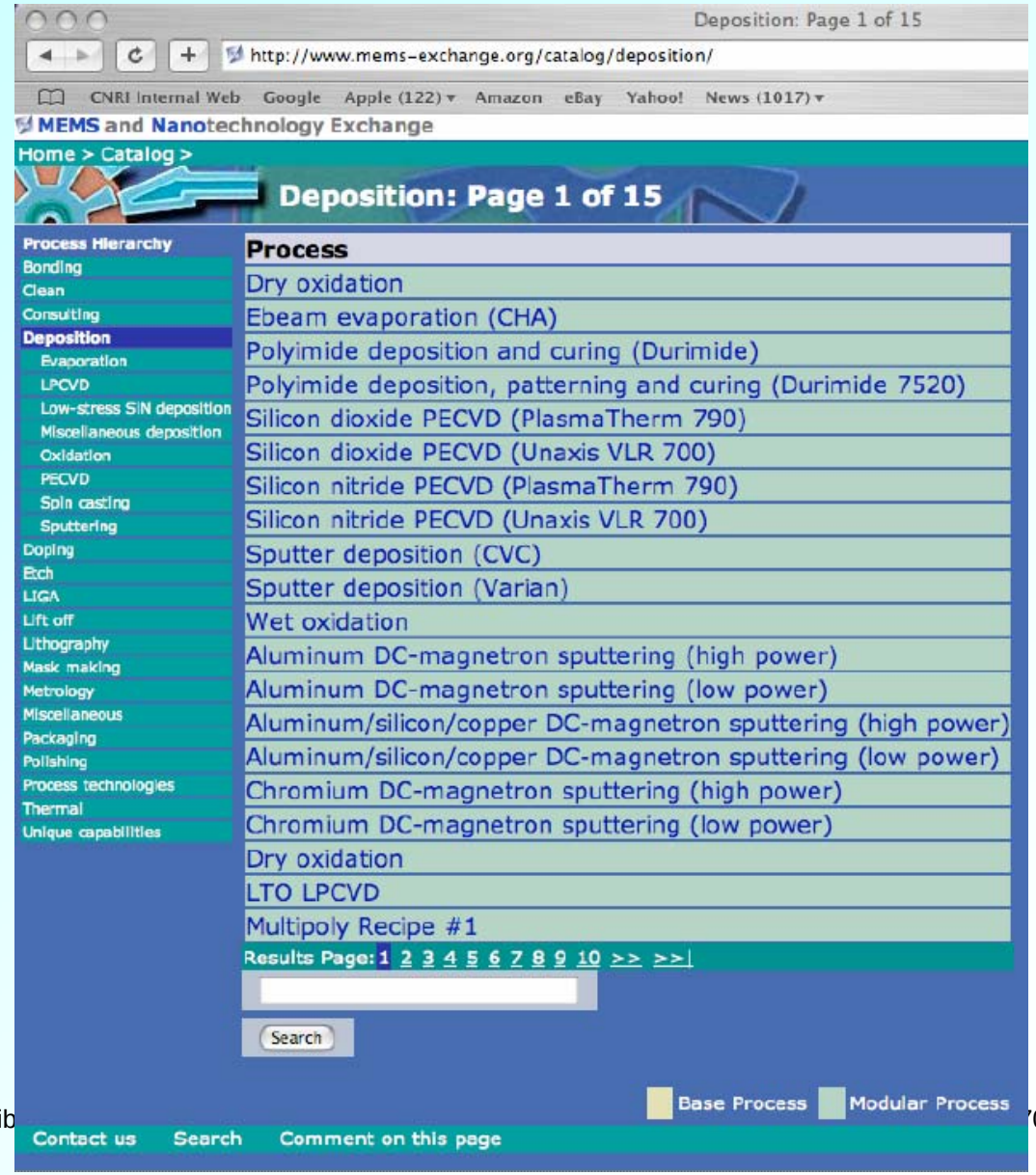
Process Catalog - Many thousands of processes!



MEMS Exchange Portfolio of Services

- Fabrication and Foundry Services
  - MEMS Exchange Network
  - MEMS Exchange and Army Research Laboratory staffed with MEMS Exchange personnel
- Process and Product Development
  - MEMS Exchange Engineers
- Design Services
  - Mask layout design (Cadence, AutoCAD, L-Edit, etc.)
  - Analytical design
  - Finite-Element Methods (FEM) and Boundary-Element Methods (BEM) Modeling using Coventor
  - Process Simulation
  - Digital and Analog Circuit Design
- Quality Control
  - MEMS Exchange Metrology Lab (SEM, Flexus, FEI FIB, Wyko, AFM, etc.)
- Testing and Material Property Measurements
  - Test Structures and Statistical Data
- Packaging
  - Standardized Methods to Fully Custom
- Project and Foundry Management Software
  - MEMS Exchange Software System

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Future DARPA BAAs

News Item: A new DARPA policy is to require all performers on MEMS programs to utilize the MEMS Exchange for their fabrication needs, unless a waiver is specially requested and received from DARPA.

Recommendation: Please contact us with plenty of lead time to discuss specific fabrication needs, get accurate pricing, devise plan to develop processes, etc. Can also provide official letter from MEMS Exchange to performer of the pricing and scope of work to include in proposal document.

BAA Proposer's Information Page: Main MEMS Exchange page has added a link to provide information about how to get pricing, support letter, etc.,

Important Note: MEMS Exchange and several fabrication sites can handle ITARS restricted work.

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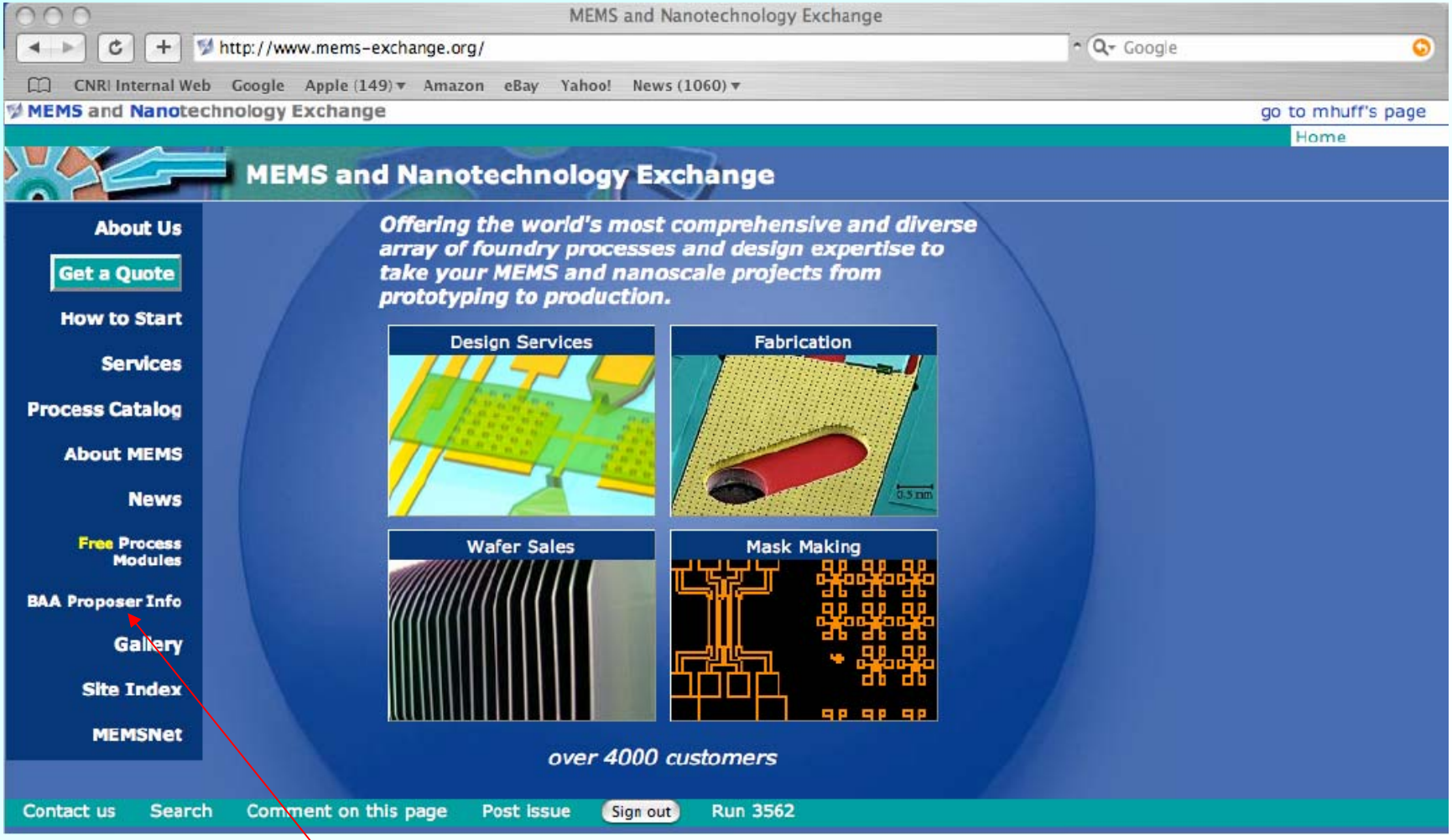
Where to go for Proposer Information



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BAA Proposer's Page (http://www.mems-exchange.org/users/baa)

DARPA Broad Agency Announcement (BAA) Responder's Information Page

Recently, the Defense Advanced Research Projects Agency (DARPA) instituted a new agency-wide policy directive that requires all organizations responding (hereafter referred to as "RESPONDERS") to future Broad Agency Announcements, BAA's, and other Agency solicitations that employ or involve MEMS technology to use the MEMS Exchange services to provide the fabrication portion of the proposed effort. The first DARPA BAA with this directive was recently issued, namely, BAA 06-08.

This page is intended to provide information that will allow RESPONDERS to more effectively and accurately include MEMS Exchange fabrication services into their responses to DARPA.

All interested RESPONDERS should make sure that they do the following BEFORE submitting a proposal to DARPA incorporating MEMS Exchange fabrication services:

1). Contact the MEMS Exchange Director, Dr. Michael A. Huff, either 703-262-5368 or mhuff@mems-exchange.org, to express interest in using MEMS Exchange services as part of their proposed effort. Dr. Huff will assign one of the MEMS Exchange engineering staff to work with the RESPONDERS to determine scope of development work required, facility resources to be employed, and develop accurate pricing of the fabrication work in order to successfully complete the fabrication portion of the effort. It is usually a good idea to have the pricing for an effort represented in the form of MEMS Exchange process run cards. These are process travelers that will incorporate all of the fabrication support work required in an effort including: masks, wafers, process development, processing steps, metrology, etc., as well as relevant pricing. A MEMS Exchange engineer can work with the RESPONDER and its representatives to develop run cards for their efforts.

It will be extremely helpful if the RESPONDERS can provide as much information as possible about what is intended including: drawings, specifications, possible fabrication sequences, etc., so as to allow the MEMS Exchange to have sufficient information to provide the support needed. If needed, the MEMS Exchange can execute a mutual Non- Disclosure Agreement (NDA) with the RESPONDER's organization before the disclosure of confidential and/or proprietary information. Please treat the MEMS Exchange as a technical collaborator on any proposed effort. The MEMS Exchange not only has the most comprehensive and diverse set of fabrication capabilities in the world, but also has one of the best MEMS engineering staffs to be found anywhere. If you need help of any sort, please let us know.

2). Develop an accurate pricing of the fabrication work. This is extremely important since the cost of the fabrication work can be a significant portion of the entire cost of a proposal and errors in the fabrication cost can have an enormous impact on the budget and success of an effort. Since the pricing of MEMS Exchange services are established by DARPA, the cost of MEMS Exchange fabrication work should not be an issue in the review process of the costing portion of a proposal including MEMS Exchange services. Importantly, if a RESPONDER does not get pricing information from the MEMS Exchange for a proposed effort, the MEMS Exchange cannot guarantee that the fabrication work can be performed within the RESPONDER's proposed budget.

3). Request a signed letter of support from Dr. Huff from the MEMS Exchange which states that the MEMS Exchange has provided pricing information for the RESPONDER's proposal and that the MEMS Exchange is able and willing to perform the fabrication work of the proposed effort. With a letter of support, the RESPONDER can be guaranteed that the MEMS Exchange will be able to deliver the fabrication scope of work proposed and for the price provided by the MEMS Exchange. Without a letter of support, the MEMS Exchange cannot guarantee the pricing is accurate, that the prices will not increase at a future date, or that the fabrication support needed can be provided.

4). Provide a disclosure to the MEMS Exchange as to whether the proposed effort or any facet of the proposed effort will come under United States International Traffic and Arms Restrictions (ITAR). The MEMS Exchange is able to handle ITAR restricted development work, but needs to know if the effort has any relevant restrictions. This disclosure should be made during the initial contact with the MEMS Exchange.

Working with MEMS Exchange on DARPA BAAs

1). Contact MEMS Exchange Director, Michael Huff, Tel: 703-262-5368

or email mhuff@mems-exchange.org

2). Please work with MEMS Exchange to develop accurate pricing of fabrication work. Be prepared to provide reasonable level of detail about what you want to implement. We can execute an NDA with your organization.

3). Get a signed letter of support from the MEMS Exchange that can be included into your proposal stating that MEMS Exchange is able and willing to perform intended implementation work. This will also guarantee your pricing.

4). Let us know if the proposed work will come under United States International Traffic and Arms Restrictions (ITAR). The MEMS Exchange can handle ITAR work but there are necessary special precautions taken.

5). Under the MEMS Exchange Customer Agreement, customers retain their IP.

6). Contact the MEMS Exchange as early as possible.

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Acknowledgments & Contact Information

The MEMS Exchange Program is supported by the Microsystems Technology Office (MTO) of the Defense Advanced Research Projects Agency (DARPA).

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